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(54) Abstract Title

Smoke seal element for lift doors

(57) A smoke seal element for lift doors comprising a brush 14 preferably attached to a slab shaped body or support 12 of rectangular cross-section and pressed into the seat of a section 16, which can be applied between front opening lift door panels 26, 28 and the frame concerned 30 and/or between telescopically opening lift door panels (34, 36 Figure 2) and in correspondence with the respective frame (38, 40 Figure 2) along the whole perimeter or part of it. The section 16 has a fundamentally "U" shaped cross-section in which the opposing parallel branches are bent towards each other to form opposing tongues and is attached with rivets or similar means to the frame or panels. The width of the seat 16 is greater than that of the support 12 and is of a height complementary to that of the support.

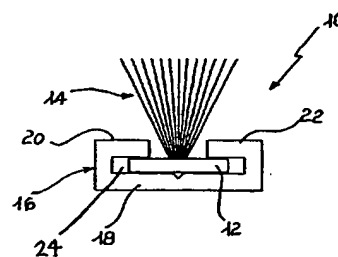
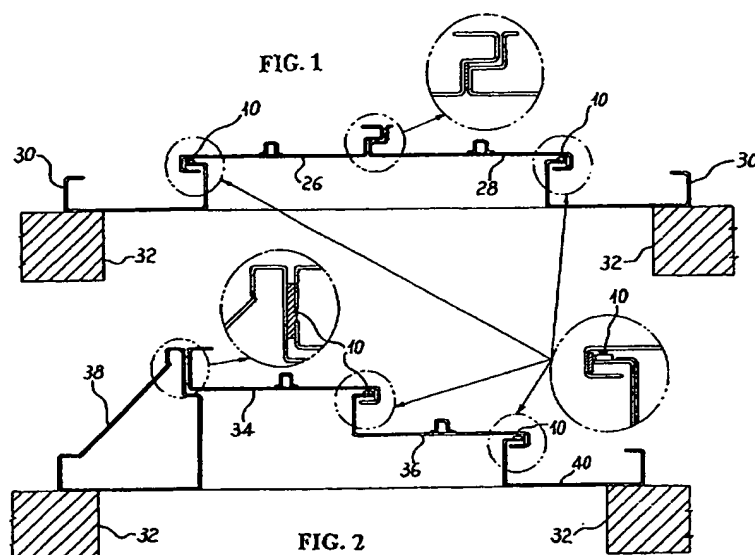


FIG. 4

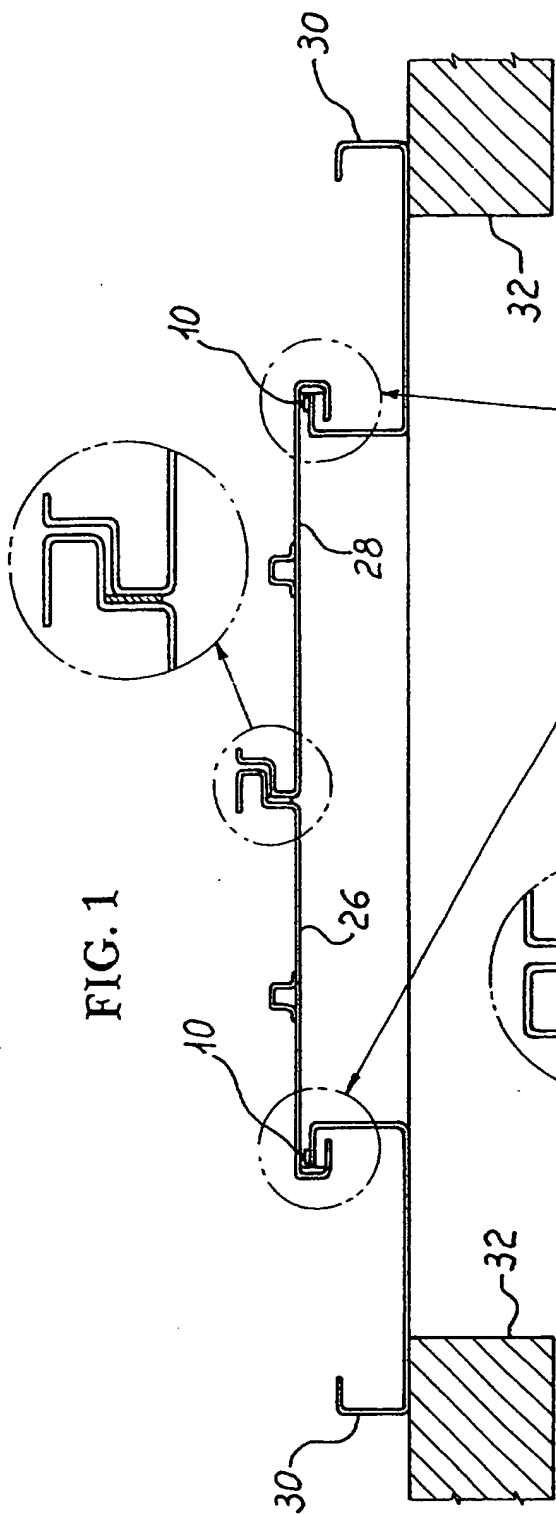


FIG. 1

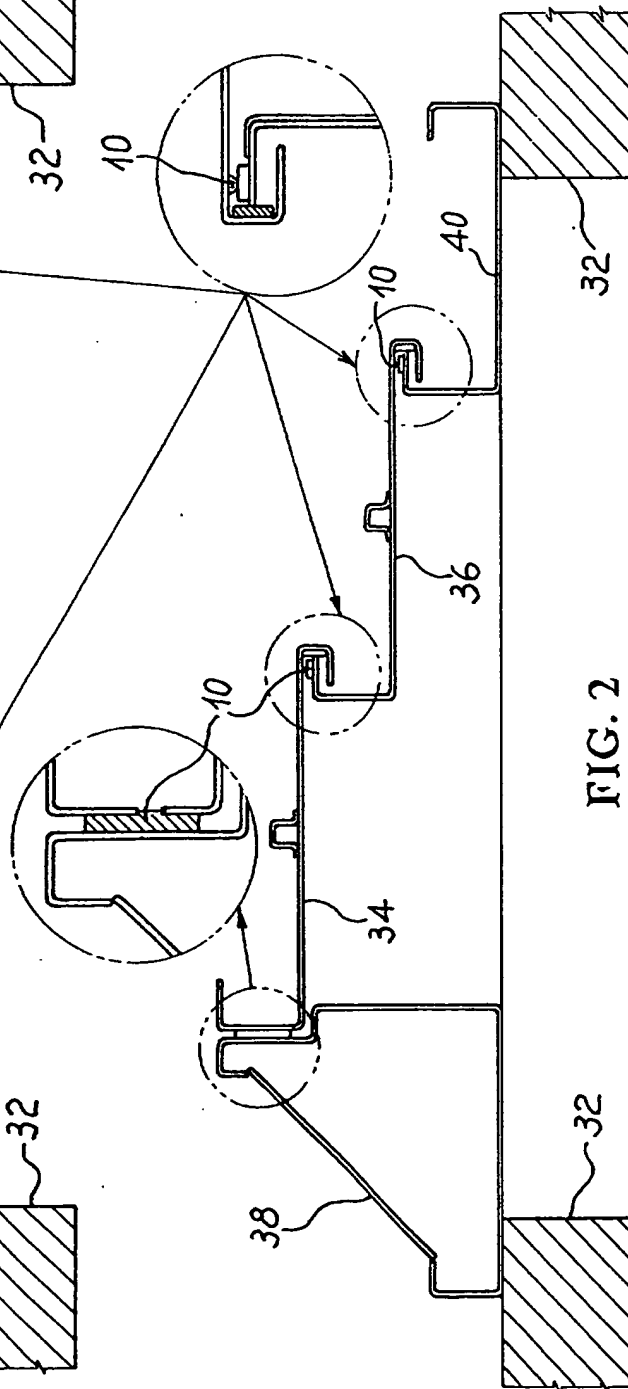


FIG. 2

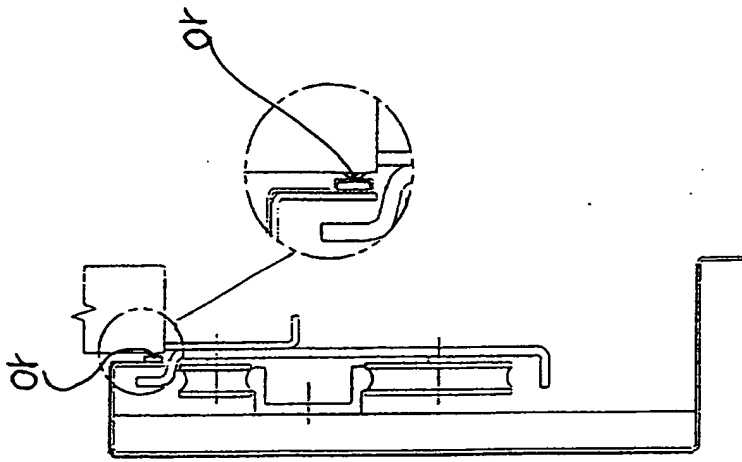


FIG. 3

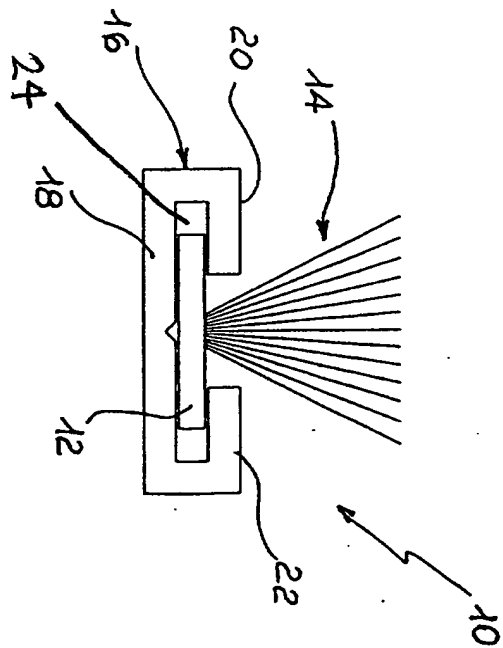


FIG. 4

SMOKE SEAL ELEMENT FOR LIFT DOORS

This invention relates to a smoke seal element for lift fire-doors.

More particularly, this invention relates to an element suitable for preventing cold smoke from passing through lift doors.

As is well-known, automatically opening floor access doors in lift installations are made up of at least two front or telescopically closing panels which can slide along top and bottom guides for the purpose. Out of necessity, there is an opening, albeit of limited depth, determined by constructional requirements, between the panels and the frame concerned and between one panel and the other in the case of telescopic closing.

That is to say that these panels cannot be arranged so as to ensure a fundamentally tight seal as their movement would, in practice, be hampered. Therefore, it is possible for an air flow to pass through the existing openings and this air flow enters the lift shaft. This problem may lead to serious damage in certain situations, i.e. in the presence of fires or centres of fire which have broken out in the building where the lift is installed. In this case, the air current actually transports the smoke which, through the said openings, extends into the lift shaft; this shaft acts as a chimney, drawing the air flow and contributing to fanning the flames.

Specific regulations in force in certain Countries impose the provision of anti-smoke sealing elements or sections for lift fire-doors. This requirement appreciably complicates the construction of the said doors and the frame

concerned as the solutions used, for example possible shaping of the panels and frame, are laborious and can, under certain conditions, make movement of these panels difficult.

The purpose of this invention is to find a solution to the problem mentioned above.

More particularly, the purpose of this invention is to produce a smoke seal element for lift doors which can be applied between the panels and the frame concerned and/or between one panel and the other in the case of telescopic closing, the element being suitable for installation without the need for laborious operations and without jeopardizing or affecting the correct sliding of these panels during opening and closing.

A further purpose of the invention is to make available to users a smoke seal element as defined above, suitable for ensuring a high level of strength and reliability over a period and such as can be easily and economically produced.

According to the invention, there is provided a smoke seal element for lift doors comprising a brush which can be applied between front opening panels and the associated frame and/or between telescopically opening panels and in correspondence with the respective frame along the whole perimeter or part of it.

The invention will now be described in greater detail, by way of example, with reference to the drawings, in which:-

Figure 1 schematically represents a smoke seal element of this invention arranged on centre opening lift door panels;

Figure 2 schematically represents the same smoke seal element applied to telescopically opening lift door panels;

Figure 3 schematically represents a longitudinal section of the panel top sliding guide, to show the said smoke seal element applied to the panels; and

Figure 4 schematically represents an independent side view of the smoke seal element.

With reference to the drawings and in particular figure 4, the smoke seal element of this invention, marked 10 as a unit, is made up of a support 12, made of metal, plastics or another suitable material, to which a brush 14 is attached. The support 12 is made up of, for example, a slab-shaped body of rectangular section, of limited height, with a groove or seat extended lengthwise in a central position for accepting the brush 14. The brush, formed from a large number of close bristles made of a synthetic material, such as nylon, is attached to the above-mentioned seat by adhesives or other suitable means. Preferably, the support and brush are obtained as a single body when being formed or with a subsequent independent operation, so that they can be fitted easily. For this purpose, the element 10 as a unit also includes a shaped section 16, made of aluminium or other suitable material, which constitutes the means of attaching the support 12 and brush 14 concerned to the panels and/or frame of the lift in correspondence with the openings. In accordance with a preferred and not limitative form of construction, the said section is fundamentally of a "U" shaped cross-section in which the opposing

parallel branches coming out of its base 18 and oriented upwards are bent at 90°, towards each other, to form opposing tongues 20, 22. The section 16 thus defines within itself a seat 24, extended lengthwise and rectangular in shape, complementary to the section of the support 12. The latter, provided with the brush 14, can thus easily be slid in to the seat 24 in which it remains stabilized. Preferably, the width of the said seat 24 is appreciably greater than the width of the support 12, in order to facilitate coupling.

The smoke seal element 10 made in this way can be easily applied to lift door panels or between these panels and the frame concerned, as shown schematically in figures 1, 2 and 3. The section 16, cut to size, is fastened with rivets or similar fasteners to the frame or panels and the support 12 with brush 14 is then placed in the seat 24 by hand. Figure 1 illustrates the application of the smoke seal element to a lift door with centre opening panels 26, 28 and to the frame concerned 30 connected to the building structure 32, whereas figure 2 shows the same application to telescopic panels 34, 36 and the frame concerned 38, 40. It can be seen, especially from the enlarged parts, that the smoke seal element 10 is made to join up, in the various different areas, in correspondence with the lines of connection between two elements without requiring the arrangement on these of specific positioning seat guides. Similarly, as shown schematically in figure 3, the smoke seal element 10 is applied in correspondence with the top sliding guide of the panels. The experimental tests carried out by the applicant confirmed the

effectiveness of the smoke seal element 10 which, applied to lifts with centre opening or telescopically opening door panels, prevents cold smoke from entering the lift shaft and thus prevents fanning a fire which has broken out in the surrounding areas. The possibility of applying the smoke seal element 10 without having to modify or prepare the structure of the lift door panels and frame concerned in a specific way proves particularly advantageous, it being sufficient to attach, with rivets or equivalent means, the section 16 in which the support 12, holding the brush 14, forms a joint.

The invention, as described above and claimed below, has, however, been proposed purely by way of example and not on a critical basis, it being understood that the invention may be liable to modifications and variants. For example, the section 16 and support 12 arranged on the seat 24 of the latter can be of a configuration and/or development different from that described and illustrated by way of example.

CLAIMS

1. Smoke seal element for lift doors, comprising a brush which can be applied between front opening panels and the associated frame and/or between telescopically opening panels and in correspondence with the respective frame along the whole perimeter or part of it.
- 2) Smoke seal element in accordance with Claim 1, wherein the support is formed from a slab-shaped body made of plastic material of rectangular section.
- 3) Smoke seal element in accordance with Claim 1 or 2, wherein the brush is attached to a support, made of plastics or another suitable material, pressed in to the seat of a section attached with rivets or equivalent means to the said frames and/or panels.
- 4) Smoke seal element in accordance with Claim 3, wherein the section is made from aluminium and is fundamentally of a "U" cross-section in which the opposing parallel branches are bent towards each other at 90° to form opposing tongues.

- 5) Smoke seal element in accordance with Claim 3 or 4, wherein the said section defines within itself a seat, extended lengthwise and of a height complementary to that of the support holding the brush.
- 6) Smoke seal element in accordance with Claim 5, wherein the width of the said seat is greater than that of the support.
- 7) Smoke seal element for lift doors substantially as described herein with reference to the drawings.